F·A·A·M facility for airborne atmospheric measurements

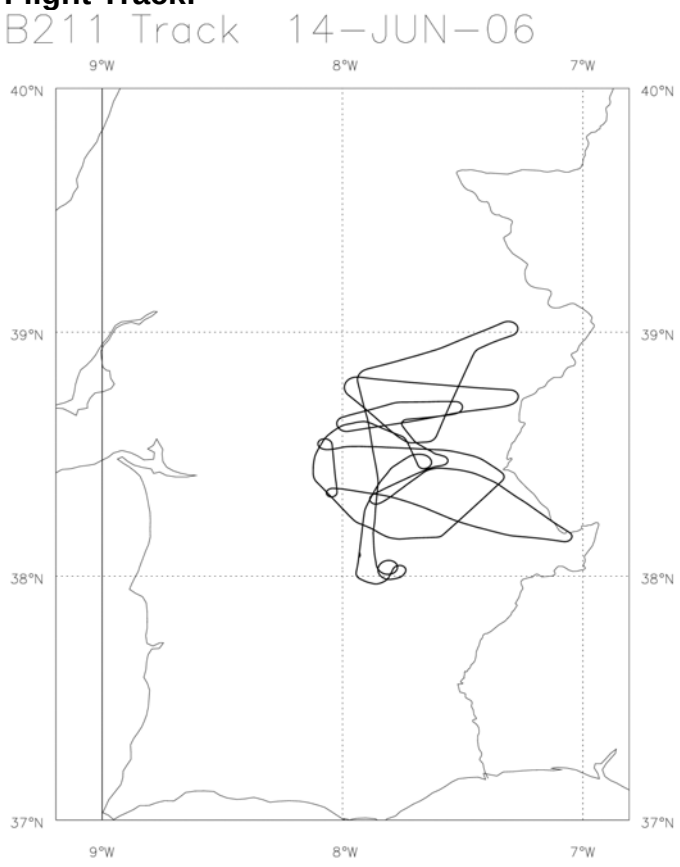
FLIGHT FOLDER

Flight No.:	B211
Date:	14th June 2006
Take Off	09:38:22
Landing:	12:14:04
Flight Time	2h35m42

Campaign: CAPEX (AEROPOR & VPRACOP)
Trials Instructions:
Operating Area: Beja Local Area

POB	Position	Name	Institute
1	Captain	Alan Foster	Directflight
2	Co-pilot	Ian Ramsay-Rae	Directflight
3	CCM	Dawn Quinn	Directflight
4	Mission Scientist	Martin Glew	Met Office
5	Flight Manager	Steve Devereau	FAAM
6	Filters 1 / CCM2	Doug Anderson	FAAM
7	SWS / SHIMS	Ian Rule	Met Office
8	Cloud Physics	Paul James	Met Office
9	Wet Neph / PSAP	Andy Wilson	Met Office
10	MARSS	James Bowles	Met Office
11	ARIES	Joss Kent	Met Office
12	Core Chemistry	Kate Turnbull	FAAM
13	CCN	Bruce Giddings	Met Office
14	CVI	Jeff Brown	Met Office
15	VPRACOP 1 / Radon	Fernando Carvalho	Instituo Tecnologie de Nulcear
16	VPRACOP 2 / Filters 2	Joao Oliveira	Instituo Tecnologie de Nulcear
17	Mission Scientist 2	Daniele Bortoli	University of Evora
18	AEROPOR 1	Frank Wagner	University of Evora
19			
20			

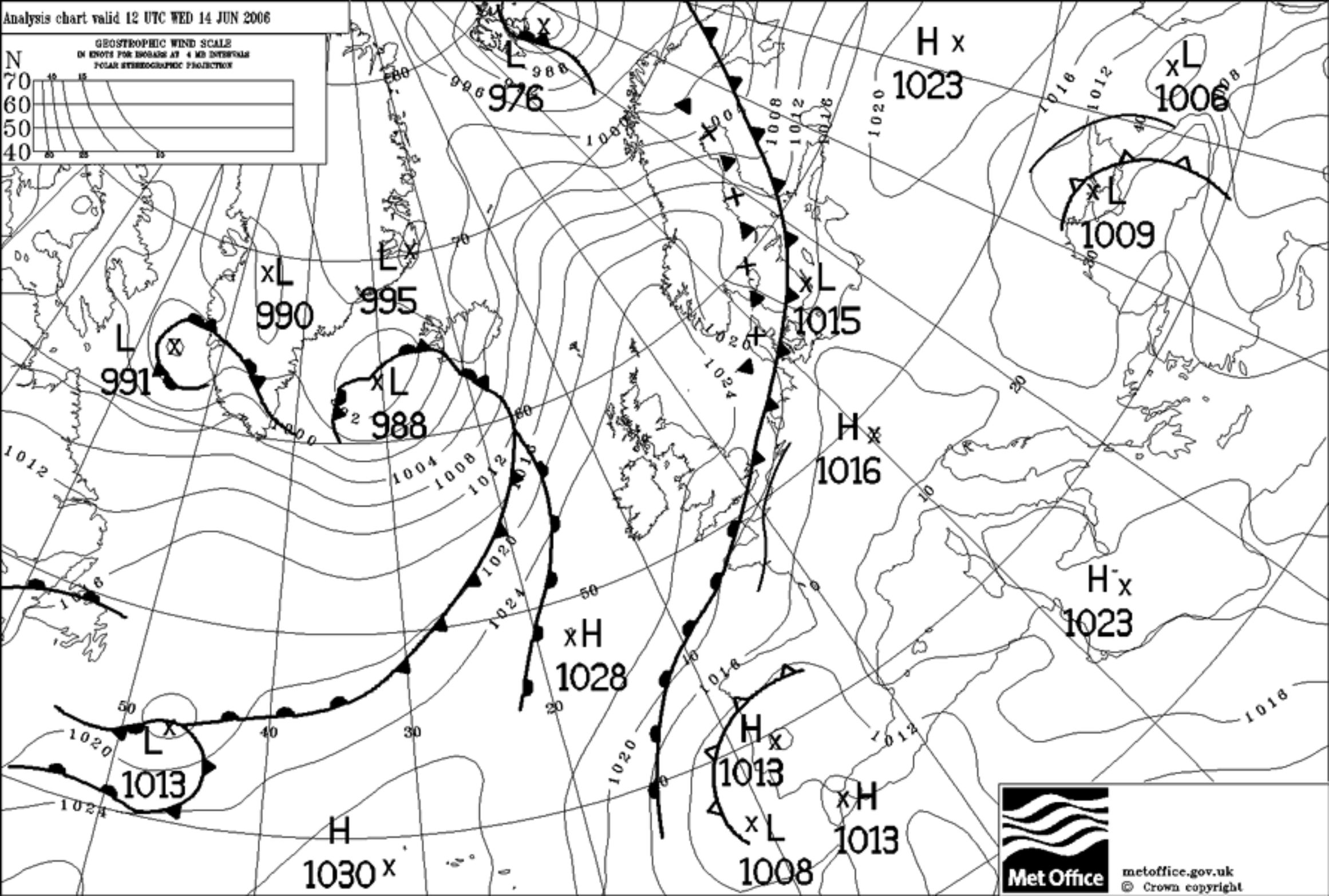
Flight Track:



FLIGHT SUMMARY

Flight No b211
Date: 14 Jun 2006
Project: CAPEX AEROPOR & VPRACOP
Location: Beja

Start Time	End Time	Event	Height (s)	Hdg	Comments
085556		event	0.68 kft	089	INU to Nav
092713		Start-Up on APU	0.68 kft	089	
092826		Start-Up 4	0.68 kft	089	
093329		event	0.68 kft	089	start taxy
093822		T/O	2.3 kft	185	
094612		jw nev zero	6.0 kft	075	
100023		nev zero	15.0 kft	077	
100053		jw zero	15.0 kft	076	
100059	100553	Run 1.1	15.0 kft	076	
100734	103004	Run 1.2	15.0 kft	240	
100846		event	15.0 kft	234	Heimann cal
103052	103639	Profile 1	15.0 - 9.1 kft	253	
103821	104359	Profile 1	9.2 - 3.6 kft	075	QNH 1010
104847	105223	Run 2.1	3.6 - 3.7 kft	150	
105438	112444	Run 3.1	1.5 - 1.6 kft	239	
105624		event	1.5 kft	236	Heimann cal
112659	112941	Profile 2	1.6 - 4.1 kft	358	
113159	113752	Profile 2	4.1 - 9.0 kft	086	
113753	120019	Run 4.1	9.0 kft	098	
114324		event	9.0 kft	215	Heimann cal
121404		Land	0.70 kft	005	
121908		Shutdown	0.69 kft	116	38 05.13N 7 55.65W


Analysis chart valid 12 UTC WED 14 JUN 2006
GEOSTROPHIC WIND SCALE
IN KNOTS FOR ISOBARS AT 4 MB INTERVALS
POLAR STEREOGRAPHIC PROJECTION
N
70
60
50
40
L 976
H 1023
L 1006
L 1009
L 990
L 995
L 991
L 988
L 1015
H 1016
H 1023
H 1028
H 1030
L 1013
H 1013
L 1008
H 1013
Met Office
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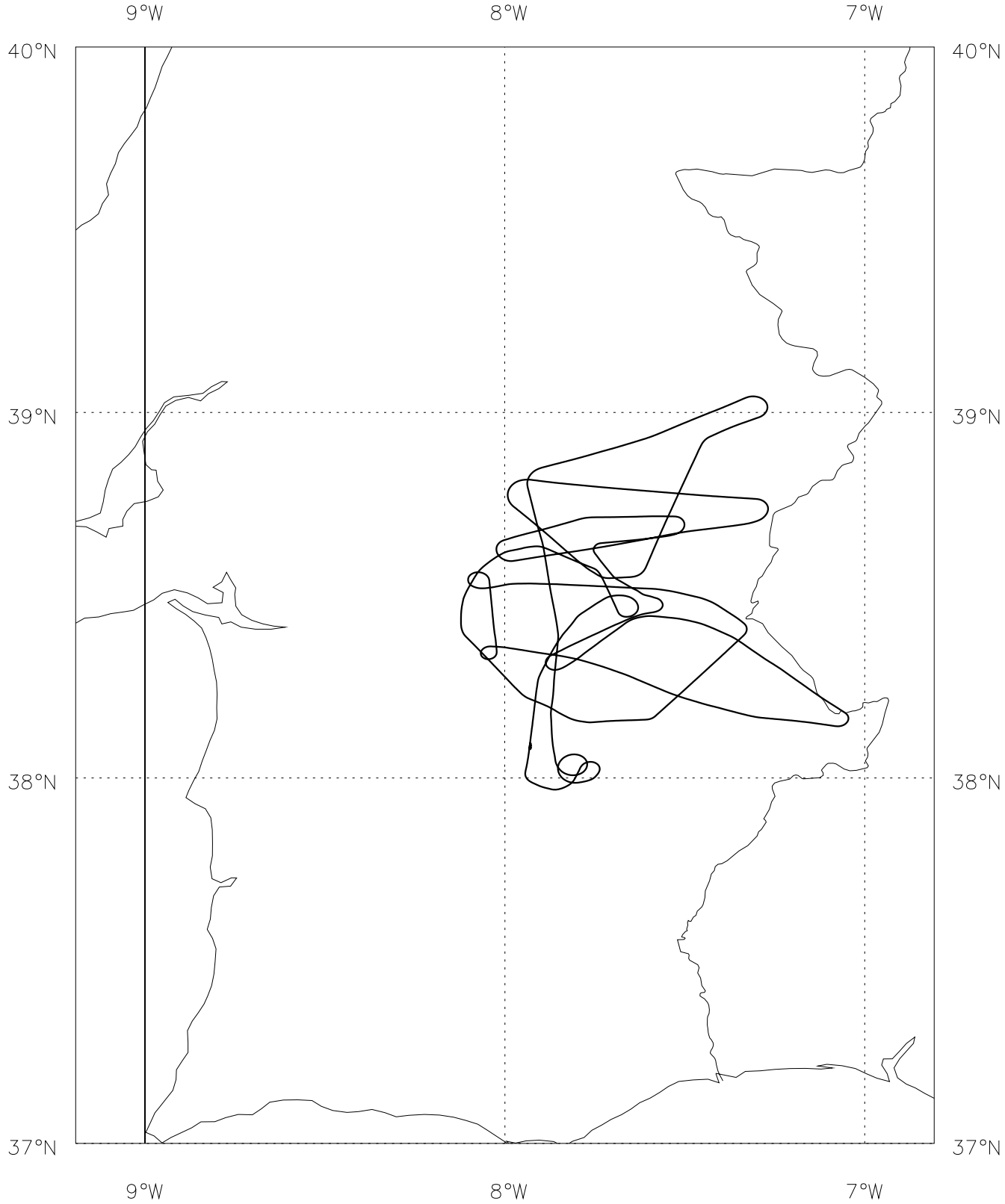
B211 Track 14-JUN-06



B211 LAND EMISS SORTIE BRIEF: June 14th 2006

There are 2 parts to the sortie.

1) LAND EMISS over the Irrigation district of Divor, Portugal.

Defined points in the irrigation area:

Point 1 – 38 deg 42 min 07.2 secs N, 7 deg 55 min 27.1 secs W
Point 10 – 38 deg 43 min 37.0 secs N, 7 deg 55 min 26.9 secs W
Point 13 – 38 deg 43 min 57.2 secs N, 7 deg 54 min 38.3 secs W
Point 27 – 38 deg 44 min 25.3 secs N, 7 deg 57 min 14.4 secs W

The irrigation district is a 500 ha site with fields of sunflower, tomato, barley, wheat, oats, maize, sorghum, rice, sugar beet and dry land. We will measure the emissivity and other surface properties at as high a spatial resolution as possible.

Weather conditions required
No upper cloud and no low cloud over the irrigation district.

Timings below are relative to the start of the first run over the site

T-5 Approach point 1from the S at lowest permitted altitude. Heimann cal, ARIES cals and ARIES zenith view
T+0 Run through points 1 and 10
T+1 Make turn while maintaining altitude to approach point 13 from the E. ARIES to store data and do cals and zenith view. Heimann cal.
T+6 Run through points 13 and 27
T+7 Make turn while maintaining altitude to approach point 27 from the W. ARIES to store data and do cals and zenith view. Heimann cal.
T+13 Run through points 27 and 10
T+14 Make turn while maintaining altitude to approach point 10 from the N. ARIES to store data and do cals and zenith view. Heimann cal.
T+19 Run through points 10 and 1
T+20 Make turn while maintaining altitude to approach point 27 from the W. ARIES to store data and do cals and zenith view. Heimann cal.
T+24 Run through points 27 and 13
T+25 Make turn while maintaining altitude to approach point 10 from the E. ARIES to store data and do cals and zenith view. Heimann cal.
T+30 Run through points 10 and 27
T+31 End mapping

Total time excluding transits 36 mins

2) AEROPOR/VPRACOP near Evora, Portugal.

Weather conditions required
For AEROPOR preferably no cloud. VPRACOP work can be done in any cloud free layers.

The sortie will be a series of racetrack patterns with 5 minute straight and level runs. Racetracks will be stacked vertically. Two racetracks will be performed at each level. Levels will be lowest permitted altitude, in a pollution layer and above the boundary layer, cloud permitting. The racetracks will be located near the ground site at Evora.

Timings below are relative to the start of the first profile.

T+0 Profile from FL100 to lowest permitted altitude.
T+15 First racetrack at lowest permitted altitude
T+30 Second racetrack at lowest permitted altitude
T+45 Profile upwards to a pollution layer, height to be determined by the mission scientist.
T+50 First racetrack in pollution layer
T+65 Second racetrack in pollution layer
T+80 Profile upwards to above boundary layer, height to be determined by the mission scientist.
T+85 First racetrack above boundary layer
T+100 Second racetrack above boundary layer
T+115 Recover to Beja

Total time excluding transits 115 mins

Take off time will be 1000L.Latest landing is 1300L. If weather conditions are unsuitable for part 1 we will proceed straight to part 2.

Mission Scientist debrief

B211 14th June 2006
LAND EMISS over the Irrigation district of Divor, Portugal. and Aerosols & clear skies (AEROPOR/VPRACOP) **flight near Evora, Portugal.**
Mission Scientist: Martin Glew

Weather Conditions:

The area was within the flow of a low pressure centre to the SW of Portugal. A severe thunderstorm passed through the area from south to north during the night. Shallow convection appeared over southern Portugal behind the storm during the morning.

Sortie:

Take off was delayed by 30 mins to 0930z due to the nights thunderstorm flooding the ground power unit (21mm fell during the night. Climatic average for Beja during June 2mm) preventing timely provision of aircraft power.

At take off at 093545z rain was falling on the Beja airfield. On the climb out there was scattered stratus as 200ft, ragged shallow Cu at 2000ft, a clear slot 2300ft – 5900ft. The aircraft transited north in cloud at FL060 towards Divor, later climbing to FL100. There was a cloud sheet with tops FL080 with Cu poking through it. It was not possible to see the Divor site so the LAND EMISS was postponed.

We profiled up to FL150 and decided to try and set up a racetrack pattern with 5 min S+L runs for radiation measurements of the lower cloud deck for AEROPOR and filter sampling for VPRACOP. After the first S+L leg of the racetrack cumulus towers forced us off track so the racetrack was abandoned. Instead we maintained FL150, flying S+L where possible but turning to avoid cloud turrets where necessary, picking clearer bits of sky by eye. This manoeuvre was called as a run and was maintained till we had been at FL150 for 30 mins.

We then profiled downwards to FL035 (minimum permitted altitude with ground obscured by cloud) to try and find a cloud free layer at lower altitude. There were cloud layers at FL115, FL090and FL048 but FL035 was cloudy and there had been no clear slot well enough defined to work with. We proceeded south in cloud till we came out below a layer of Cu with layer cloud above. We attempted to maintain height cloud free at FL035 but failed. We then descended and maintained FL015 for 30 minutes, keeping S+KL for as long as possible but manoeuvring to avoid cloud as was done at FL150. During this time the skies above cleared, leaving us underneath a field of shallow Cu with little other cloud.

We then profiled to get above the shallow Cu layer, settling on FL090 as likely to be cloud free. Cu Nims were seen over Lisbon and to the south. To the east there appeared to be a haze layer at approx. FL100 which was stable enough to inhibit the Cu growth there. At our operating region the Cu began to grow above FL090 so the last part of this run was a series of curves to avoid the Cu turrets.

After 22 mins at FL090 we ran out of budgeted science time and recovered to Beja, briefly passing through the bases of 2 shallow Cu on the way. Landing was at 1214z

Success of flight:
The land emiss part of the flight was aborted. The VPRACOP group got long filter sampling times at 3 levels that were cloud free. AEROPOR got views above and below convective cloud fields.

Instrument status:

SWS: OK
SHIMS: OK
ARIES: OK
MARSS: All channels showing occasional spikes. Mirror bearings showing signs of wear.
Wetneph: OK
Cloud Physics: OK
Core chemistry: Problems with CO and Nox
CVI: OK
CCN: OK
Filters: OK
PSAP: failed

CORE CHEMISTRY FLIGHT LOG FOR FLIGHT FOLDER

Flight Number : B211
Date : 14/06/06
Operator and contact info : Kate Turnbull katet@faam.ac.uk

Problems with Instruments

No time to carry out zeros on NOx or Ozone instruments before security for the flight.

CO	**Background ppbV became very high above FL150, resulting in unreliable data, especially during profile descent after calibration.**
O_3	**None**
NO_x	**No flow through Ozonator at FL150 and above therefore only NO channel available (no NO_2 or NO_x measurements). Flow did not recover on descent until FL110.**
SO_2	**N/A**
TDLAS	**N/A**
WAS	**N/A**

CLOUD PHYSICS LOG Flight B211

Date: 14/6//06	Operator: papj	DRS Time: 07:35:00	DAU1 Time: 0	DAU2 Time: +0	DAU3 Time: 0	Aux1 Time: +0	Aux2 Time: +0	Page 1 of 1

G.M.T	PCASP		FFSSP	SID1	SID2	2D2-C		2D2-P		CIP25			CIP100			Habit	Remarks
	Conc/cc	Mean R	Block TX	Count	Count	Conc/L	Max size	Conc/m3	Max size	Conc m3	Max size	LWC	Conc m3	Max size	LWC		
100059	100	0.1	517														Start run 1.1
1003	100	0.1	517														
1006	80	0.1	517														
100734	90	0.1	517														Start run 1.2
1010	50	0.09															
1013	50	0.1															
1016	40	0.1															
1019	90	0.09															
1022	30	0.1															
1025	30	0.1															
1029	40	0.1	517														
103004																	End run 1.2
103052																	Start p1
1033	130	0.09	517	5													130
103540	400	0.1	517	10													100
104030	500	0.2	633	2000		100	200										070
104257	600	0.13	814	5000	8000	40	400										045
104359																	End p1
104847	700	0.09	1294	40	10												Run 2.1
1052	700	0.1															
105223																	End 2.1
105438	900	0.09	1296	30	1												Start 3.1
1057	900	0.09		40	3												
1100	1000	0.09															
1105	850	0.09															
1110	850	0.09															
1115	1000	0.09															
1120	1000	0.09															
112444	950	0.09															End 3.1
113159	550	0.09	1345														
1135	220	0.09															
113752	2150	0.09															Start 4.1
1140	125	0.09															
1145	50	0.09															
1150	50	0.09															
1153	100	0.09															
1155	200	0.09															
1200	140	0.09															
120019																	End 4.1

CLOUD PHYSICS LOG Flight B211

Date: 14/6//06	Operator: papj	DRS Time: 07:35:00	DAU1 Time: 0	DAU2 Time: +0	DAU3 Time: 0	Aux1 Time: +0	Aux2 Time: +0	Page 2 of 2

G.M.T	PCASP		FFSSP	SID1	SID2	2D2-C		2D2-P		CIP25			CIP100			Habit	Remarks
	Conc/cc	Mean R	Block TX	Count	Count	Conc/L	Max size	Conc/m3	Max size	Conc m3	Max size	LWC	Conc m3	Max size	LWC		

~~ZZ~~ 211 (1)

FLIGHT NUMBER: B	DATE: 19/06/06	OPERATOR: B. GIDDINGS	Page 1 ~~of 2~~
PROJECT: CAPEX.			

CCN LOG

ALLEVIATOR GMT ON	ALLEVIATOR GMT OFF	HEIGHT & Tc	TEMP INLET (Tb)	STATIC 1	2	3	4	5		REMARKS
		15000'		1.75	2.5	3.5	4.25	5.5		
100057	100150	25.33	23.9	0.17	0.31	0.49			S	Est. Racetrack R1.1
		25.32	22.31	350	1549	1459	abandoned		D	Adjusted
		25.29	21.32	0	304	1422			B	base trimp
purged				2360	2361	2358			R	between Sample 1 & 2
Sample				941.7	941.6	941.6			P	Still wandering Baseline
		15000'								
101405	101449	25.24	22.93	0.18	0.31	0.49	0.71	1.07	S	Retook Sample
		25.23	22.18	391	437	656	672	623	D	@ same height Run 1.2
		25.21	21.47	429	411	426	415	424	B	No Baseline
		25.22	20.67	2366	2367	2351	2343	2342	R	adjustments for this block.
end	102355	24.58	19.02	941.7	941.7	941.7	941.7	941.8	P	
		3500'		1.75	2.5	3.5	4.25	5.5		
104847	104924	25.61	23.40	0.17					S	Run 2.1
				591					D	Run
				487					B	abandoned
				2398					R	due to cloud
				989.4					P	
									S	
									D	
									B	
									R	
									P	
				1.75	2.5	3.5	4.25	5.5		

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FLIGHT NUMBER: B	DATE: 14/06/08	OPERATOR: B. Giddings	Page ~~1~~ of 2
PROJECT: CAPEX			

CCN LOG

TG

ALLEVIATOR GMT		HEIGHT & TG	TEMP INLET	STATIC						REMARKS
ON	OFF			1	2	3	4	5		
		~~1700~~ 1400'		1.75	2.5	3.5	4.25	5.5		1400'
10 54 38	10 55 21	25.48	23.4	0.17	0.31	0.49	0.71	1.07	S	Run 3.1
		25.54	22.50	548	738	588	1456	1826	D	
		25.48	21.66	470	481	487	495	586	B	
		25.36	20.85	2398	2401	2398	2400	2401	R	
		25.32	19.85	989.4	989.4	989.4	989.4	989.4	P	
		1400'								
11 05 48	11 06 15	25.38	23.07	0.17	0.31	0.49	0.71	1.07	S	Run 3.1
		25.37	22.36	583	849	1081	1401	1630	D	
		25.32	21.52	479	502	497	512	595	B	
		25.24	20.76	2401	2404	2406	2411	2412	R	
11 12 ~~36~~ 06	off @	25.23	19.71	989.4	989.4	989.4	989.4	989.4	P	
		1400'		1.75	2.5	3.5	4.25	5.5		
11 13 24	11 13 58	25.31	22.99	0.17	0.31	0.49	0.71	1.08	S	Run 3.1
		25.29	22.24	679	1118	1178	1550	1799	D	
		25.22	21.43	472	465	475	491	572	B	
		25.12	20.63	2404	2388	2380	2384	2399	R	
off @ 11 21 36		25.15	19.51	989.4	989.4	989.4	989.2	989.2	P	
									S	
									D	
									B	
									R	
									P	
				1.75	2.5	3.5	4.25	5.5		

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(3)

FLIGHT NUMBER: B	DATE: 14/06/06	OPERATOR: B. GIDDINGS	Page 1 of 2
PROJECT: CAPEX			

CCN LOG

T6

ALLEVIATOR GMT		HEIGHT & T6	TEMP INLET	STATIC						REMARKS
ON	OFF			1	2	3	4	5		
		9000'		1.75	2.5	3.5	4.25	5.5		
11 3753	11 3846	25.31	23.05	0.17	0.31	0.49	0.71	1.07	S	Run 4.1
		25.32	22.32	520	483	890	1294	1575	D	
		25.27	21.56	433	426	445	453	473	B	
off @		25.27	20.75	2381	2379	2378	2377	2375	R	
11 48	36	25.	19.71	983.2	983.1	983.1	983.1	983.1	P	
		9000'								
11 49 20	11 50 10	25.21	22.39	0.17	0.31	0.49	0.71	1.07	S	Run 4.1
		25.22	22.20	440	499	648	957	960	D	
		25.16	21.38	413	397	401	402	431	B	
end @		25.08	20.61	2358	2360	2355	2352	2349	R	
1,5847		25.00	19.51	983.1	983.1	983.2	983.2	983.2	P	
				1.75	2.5	3.5	4.25	5.5		
									S	
									D	
									B	
									R	
									P	
									S	
									D	
									B	
									R	
									P	
				1.75	2.5	3.5	4.25	5.5		

P.S.A.P. Log

Flight No. **B**.211..... Date .14/06/06..... Page ..1 of .1.....

GMT	Filter Trans.	Flow Rate	B_a x 10^{-6}	Ph_det levels		Run	Remarks
Set to DRS time	New filter Tr = 1.000	Set to 3.0 lpm				(30s) ? Ave = s	←Preflight
093000	1	2.99		20	47	30	preflight ok
095000	1	3	3.6	20	47	30	filter fitted
103600	1	3	6.7	20	47		data start. Delayed due to comms problems
120130	.939	3	12.2	19	47		data stop

Filter Sampling Log

Flight No: B211 **Date:** 14 Jun 2006 **Operator:** Joao / Doug

Type of filters mounted in	Top inlet	90mm diameter type AC	Bottom inlet	90mm diameter type AC

Run No	Disk #1 TOP	Disk #2 MIDDLE	Disk #3 BOTTOM	Inlet Top/ Bottom	Time On (Z)	Time Off (Z)	Flight Run	Accum Vol [l]	Comments
Ground	AC59	-	-	Top	08:53	09:13:40	-	2012	
Ground	AC60	-	-	Bottom	08:53	09:13:40	-	3804	
Filters run 1	AC61	-	-	Top	10:00:59	10:30:04	R1.1/2	1464	FL150 AC62 partly split & 2/3 loose R1.1 10:00:59 – 10:05:53 End of R1.1 "flow so far" Top: 263, Bot: 642 R1.2 10:07:34 – 10:30:04 Start of R1.1 "flow so far" Top: 346, Bot: 856
Filters run 1	AC62	-	-	Bottom	10:00:59	10:30:04	R1.1/2	3724	
Filters run 2	AC63	-	-	Top	10:48:47	10:52:23	R2.1	196	FL035 (or 3500') Aborted due to cloud base. Descended to lower level. Sample pipes closed during descent to prevent cloud contaminating filters. Flows not zeroed so totals below include this short run.
Filters run 2	AC64	-	-	Bottom	10:48:47	10:52:23	R2.1	314	
Filters run 3	AC63	-	-	Top	10:54:38	11:24:44	R3.1	(start) 249 - (end) 2351	Start value shows flow when sample pipes reopened at new level (1400' above sea level = 500' to 1100' radalt)
Filters run 3	AC64	-	-	Bottom	10:54:38	11:24:44	R3.1	(start) 392 - (end) 2262	
Filters run 4	AC65	-	-	Top	11:37:53	12:00:19	R4	1283	AC66 was damaged so not used. AC67 used instead FL090
Filters run 4	AC67	-	-	Bottom	11:37:53	12:00:19	R4	1190	
Ground	AC69	-	-	Top	12:21:50	12:38:45	-	1245	QNH 1010
Ground	AC70	-	-	Bottom	12:21:50	12:38:45	-	2862	
		-	-	Top					
		-	-	Bottom					

ARIES flight log

Flight: B211 | Location: Beja, Portugal CAPEX | page 1 of

Date: 14/6/06 | Operator(s): Joss Kent. | Resolution: 1 | Gain A: 2 B: 2

Notes: It's raining — in Portugal! 2 cm⁻¹

DRS time	Flight ptrn	Filename	Shtr	HBB	CBB	Mir.	Det.	Win	Macro(s)	Comments
040211	Grnd	B211B	Osd	71.1	31.1	22.4	-190.6	24.0	CH1	Grnd res'l.
045952	Race 1	B211C	Osd	70.9	30.8	16.2	-190.6	27.1	CH1	
100104	Racetrack 1.1	B211D	Osd	70.8	30.2	15.6	-190.6	27.0	N1 x 3	→ 1006
100359	" " 1.1	B211E	Open	70.3	31.2	12.3	-190.6	28.7	Z1 x 1	
100512	" " 1.1	B211F	Osd	70.9	30.8	9.9	-190.6	22.8	N1 x 1	
100622	End R1.1	B211G	Osd	70.6	31.0	9.8	-190.6	23.3	CH1	
100740	R1.2	B211H	Osd	70.9	30.5	9.7	-190.6	24.0	N1 x 3	
101040	R1.2	B211I	Open	70.3	30.5	8.6	-190.6	22.6	Z1 x 1	Fell over — rebooted @ 2 cm⁻¹
101422	R1.2	B211J	Osd	69.3	30.5	5.7	-190.6		N1 x 2	— HBB = 60°C
101551	R1.2	B211K	Open	67.5	30.0	6.1	-190.6	21.3	Z1 x 2	
101713	R1.2	B211L	Osd	81.5	29.3	6.0	-190.6	20.2	CH1 x 2	
101931	R1.2	B211M	Osd	61.1	28.2	6.3	-190.6	21.4	N1 x 8	turning @ end of views.
102227	R1.2	B211N	Open	60.2	25.6	5.6	-190.6	20.2	Z1 x 2	
102341	R1.2	B211O	Osd	61.1	24.9	5.2	-190.6	20.0	CH1 x 2	
102456	R1.2	B211P	Osd						N1 x 8	wings not level near end. (to 28° →)
102852	L1.2 end	B211Q	Osd	66.8	22.1	5.6	-190.6	19.9	CH1 x 2	
										103431 — reformed software
104410	R2.1	B211R	Osd	71.0	30.4	12.3	-190.6	22.1	CH1 x 2	B500 on 1010 mb.
104935	R2.1	B211S	Open						N1 x 8	

ARIES flight log

Flight: B211 | Location: Baja, Portugal | page 2 of

Date: 11/16/06 | Operator(s): Joss | Resolution: 2 | Gain A: 2 B: 2

Notes:

DRS time	Flight ptrn	Filename	Shtr	HBB	CBB	Mir.	Det.	Win	Macro(s)	Comments
105328	R2-1	B211T	closed	71.0	31.1	17.6	-1906	21.7	CH1 x 2.	
105446	R3-1	B211U	open	70.4	30.9	18.0	-1906	22.1	Z1 x 8	1150 57.10
105838	R3.1	B211V	closed	71.1	31.4	21.3	-1906	22.9	[illegible]1 x 2	
105957	" "	B211W	open	70.2	30.0	21.0	-1906	23.0	[illegible]1 x 2	
110109	" "	B211X	closed	71.1	32.0	21.6	-1906	23.3	CH1 x 2	
110224	" "	B211Y	open						Z1 x 8.	
110619	" "	B211Z	closed	71.2	32.1	23.3	-1906		N1 x 2	
110736	" "	B211Φ	open						Z1 x 2	
110845	" "	B2111	closed	71.3	32.9	23.8	-1906	24.5	CH1 x 2	
110902	" "	B2112	open			23.8	-1906	24.6	Z1 x 8	
111357	" "	B2113	closed	71.1	33.2	24.9	-1906	25.3	N1 x 2	
111512	" "	B2114	open						[illegible]Z1 x 2.	
111624	" "	B2115	closed	71.0	33.5	25.1	-1906	25.6	CH1 x 2.	
111737	" "	B2116	open			25.4	-1906	25.8	Z1 x 8.	
112139	" "	B2117	closed	71.2	34.7	25.4	-1906	25.6	N1 x 2	
112246	" "	B2118	open						Z1 x 2	shutter closed at start 11 25
112405	" "	B2119	open						[illegible]1 x 2	
112548	end R3-1	B211A	closed	71.0	35.2	25.1	-1906	26.2	CH1 x 2	

ARIES flight log

Flight: B211 | Location: Beja, Portugal | page 3 of

Date: 14/6/24 | Operator(s): Joss | Resolution: | Gain A: B:

Notes: EAPEX

DRS time	Flight ptrn	Filename	Shtr	HBB	CBB	Mir.	Det.	Win	Macro(s)	Comments
112435	~~RRRP2~~	C211B	closed	71.0	33.6	24.9	-190.6	~~24.7~~	CH1x2	
113740	P2/RH1	C211C	closed	70.9	31.4	22.6	-189.9	27.3	~~RH1x8~~ CH1x2	
113849	RH-1	C211D	closed						N1x8	
114254	RH-1	C211E	open						Z1x2	
114408	RH-1	C211F	closed	71.0	31.0	17.8	-190.1		~~CH1x2~~ N1x2	
114519	RH-1	C211G	closed	70.9	30.8	17.8	-190.6	25.6	CH1x2	
114631	RH-1	C211H	closed						N1x8	
114839	RH-1	C211I	~~closed~~	open					Z1x2	
115156	RH-1	C211J	closed			15.8	-190.6	23.9	N1x2	
115310	RH-1	C211K	closed	70.9	30.8	16.0	-190.6	24.4	CH1x2	
115425	RH-1	C211L	closed	70.9	30.8	16.0	-190.6	24.9	N1x8	
115833	RH-1	C211M	open	70.5	30.8	15.1	-190.6	24.1	~~Z1x2~~ Z1x3	
120016	RH-1	C211N	closed	71.0	30.9	14.6	-190.6	23.5	CH1	

Microwave Radiometers FLIGHT LOG	Date	14/6/06	Flight	B211	log pages	
Operator(s)	JB		Campaign	CAPEX		
Departure	Beja		Arrival	Beja		

System start

MARSS

Visual pod inspection						•
Close 3 SSP circuit breakers						•
Close all MARSS circuit breakers						•
FERA on				at time		
Temperature controller initial temps	Ch16	21°C	Ch 17	21°C	Ch18 -20	20°C
Temperature controller set points		54°C		58°C		40°C
MARSS CPU on				at time	08:24	
Initial target temperatures	Hot	292.1		Cold	291.8	
Target heating						•
*** CHECK SCAN HEAD CLEAR ***						•
Scanning on (LMD box)				at time	08:27	
Scan indication		Monitor	•		Visual	•

Deimos

Close all Deimos circuit breakers	Not Fitted			
Turn on Deimos CPU				
*** CHECK SCAN HEAD CLEAR ***				
Start Deimos Software			at time	
Initial target temperatures	Hot		Cold	
Target heating				
Scan indication		Monitor	Visual	
Weather	Cloud	8/8	Precip	Yes
	Surface	wet	Pressure	
	Other			

System functionality check

(after initial system warmup, approx 1 hour)

PC to DRS Time error		$t_{PC}=t_{DRS}$ +	0	at time		
Brightness temps 'sensible'						•
Target temps	MARSS:	Hot		Cold		
	Deimos:	Hot		Cold		

Channel gains 'sensible'	Ch1 A (-)	Ch3 A (-)	Ch1 B (-)	Ch3 B (-)	
	Ch16 (40-44)	Ch17 (45-49)	Ch18 (40-44)	Ch19 (40-44)	Ch20 (44-48)
	43.8	34.0	38.7	40.7	41.7

Power changeover

Headset on before start			•
Listen to engine start sequence	4, 3, 2, 1.		•
LMD off (3 switches, bottom to top)			•
Exit Deimos Software (x)			
POWER CHANGEOVER			
LMD on (3 switches, top to bottom)	then pushbutton		•
Restart Deimos Software			
System running again		at time	

Flight #	B	Date		Operator(s)		log page	2	of	2

Time	Run id	Alt/FL	*Remarks*	Sys
09;51	**Trans**		Mostly in cloud.	
10:00:59	**R1.1**		Race track, Cloud below, clear above	
10;16	**R1.1**		Some turns to avoid cloud	
10:28:30	**R1.2**		Turning to avoid cloud	
10:36:40	**P1**		In cloud tops	
10:48:47	**r2.1**		Cloud above, 2/8 patchy below	
10:54:38	**R3.1**		5/8 cloud above, clear below 1500ft	
11:06			Over lakes, ch16 seen them	
11:24			Marss laptop display gone, reboot req. MARSS pc still ok through out	

Wet Nephelometer Log

Flight No B211 Date 14/06/06 Operator's name: Wilson Page 1 of 2

GMT	Run	Height	Sample flow	Dry neph RH	Wet neph RH	Temp ramp	T_{water}	Remarks
090000								Pre flight OK. Wet Night & some GPU problems.
093945								T/o from BejA
100059	R1.1	fl150	9.6	3	38	—	5c	Start R1.1
100553	-"-	-"-	9.6	3	38	→	5c	end R1.1
100734	R1.2	-"-	12.6	3	39	↗	5c	Start R1.2. set water to +43
101359	-"-	-"-	13.5	3.1	83	—	43	
101700	-"-	-"-	14.6	2.6	89	↘	43	set water to 34. RH5 @ 98%
102630	-"-	-"-	14.6	0.4	66	↘	34	set water to +39. RH5 dropping.
103004	-"-	-"-	14.6	1.5	75	—	39	end R1.2. descending to 3500ft
								Will reboot pc this descent due to PsAP comms probs.
104059		063	14.6	48	86	—	39	PC back. PsAP Now recording. Neph data now recording as B211a.
103052	P1	fl150						start P1
104359		3500ft	12.3	67	92	—	39	end P1 @ 3500ft
104847	R2.1	3500ft	13.5	63	93	↘	39	start R2.1. Set water to ramp down to +8C
105223	-"-	-"-	14.2	66	76	↘	23	end R2.1
105438	R3.1	1500ft	14.3	82 *	74	↘	16	Start R3.1
110000	-"-	1500ft	14.5	78 *	72	↗	12	set water to +40c
110430	-"-	-"-	14.3	81 *	93	↘	40	set water to +17c. *Suspect ~~dry~~ dry Neph RH.
111730	-"-	-"-	14.4	72 ?*	63	↗	17	set water to +39c.
112444	R3.1	-"-	14.2	79.7	89	↗	39c	end R3.1. Set water to +33c.

112200 * Suspect last nights heavy rain has found it's way into neph rosemount inlet. Dry neph reading 75%. RH1 & 3 54 & 36% respectively. GE says 15.1% at this level, 1500ft ASL.

Wet Nephelometer Log

Flight No B211 Date 14/06/06 Operator's name: Wilson Page 2 of 2

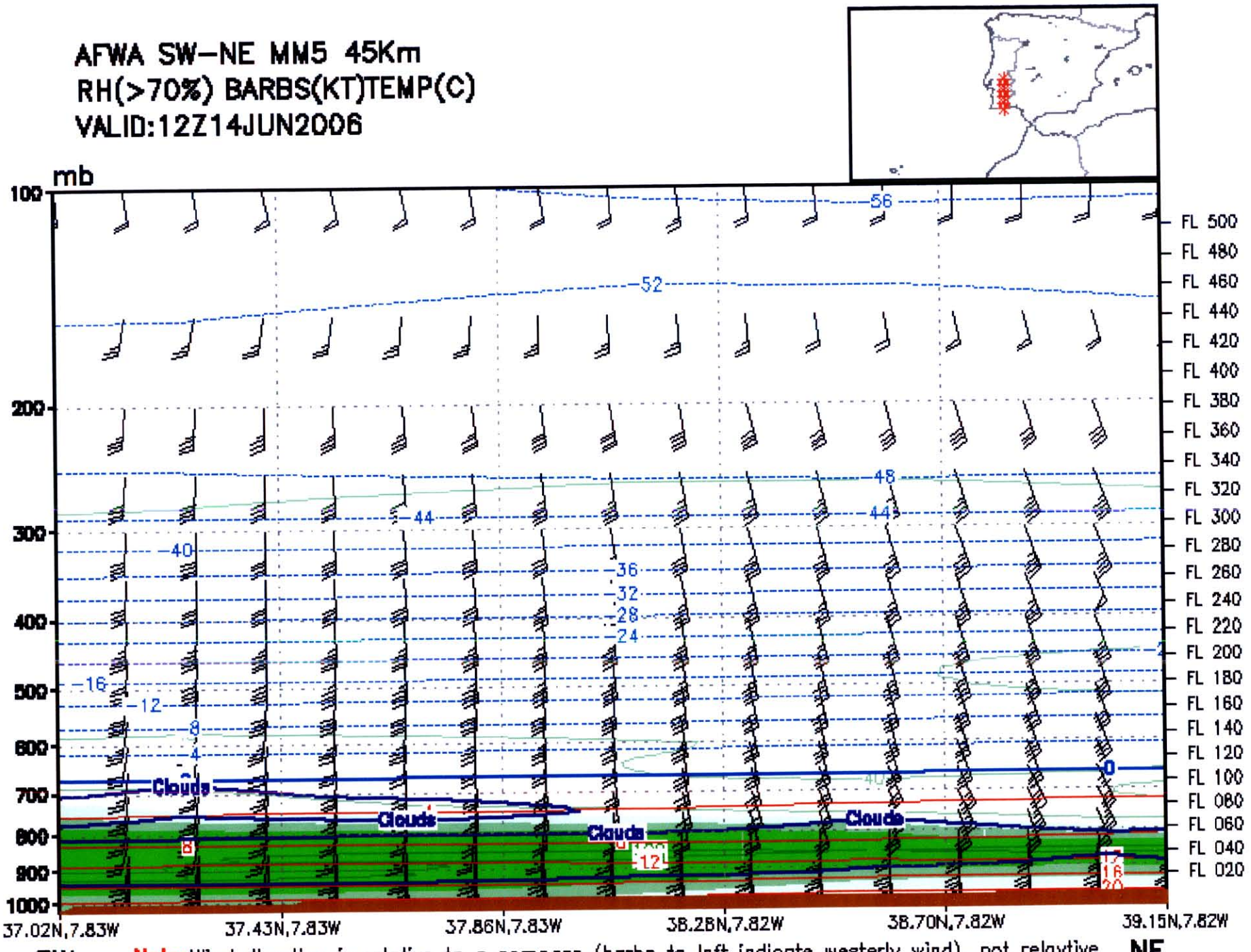
GMT	Run	Height	Sample flow	Dry neph RH	Wet neph RH	Temp ramp	T_{water}	Remarks
112659	P2	1500ft	13.6	78?	83	↘	34	Start P2.
112941	P2	4000ft	13.0	57.5?	77	—	33	end P2.
113753	R4.1	from 090					33	start R4.1
114000						↗	33	set water to +40
114610		090	11.1	17.4	79	—	39	set water to +43
115016	4.1	090	11.1	17.4	83	↘	43	Set water to +8c
115745	4.1	090	11.0	21	52	↗	26	set water to +41c
120019	4.1	090	11.0	15.5	77	↗	40	end of run 4.1. End of Science Data stop.

SWS and SHIMS FLIGHT LOG SHEET

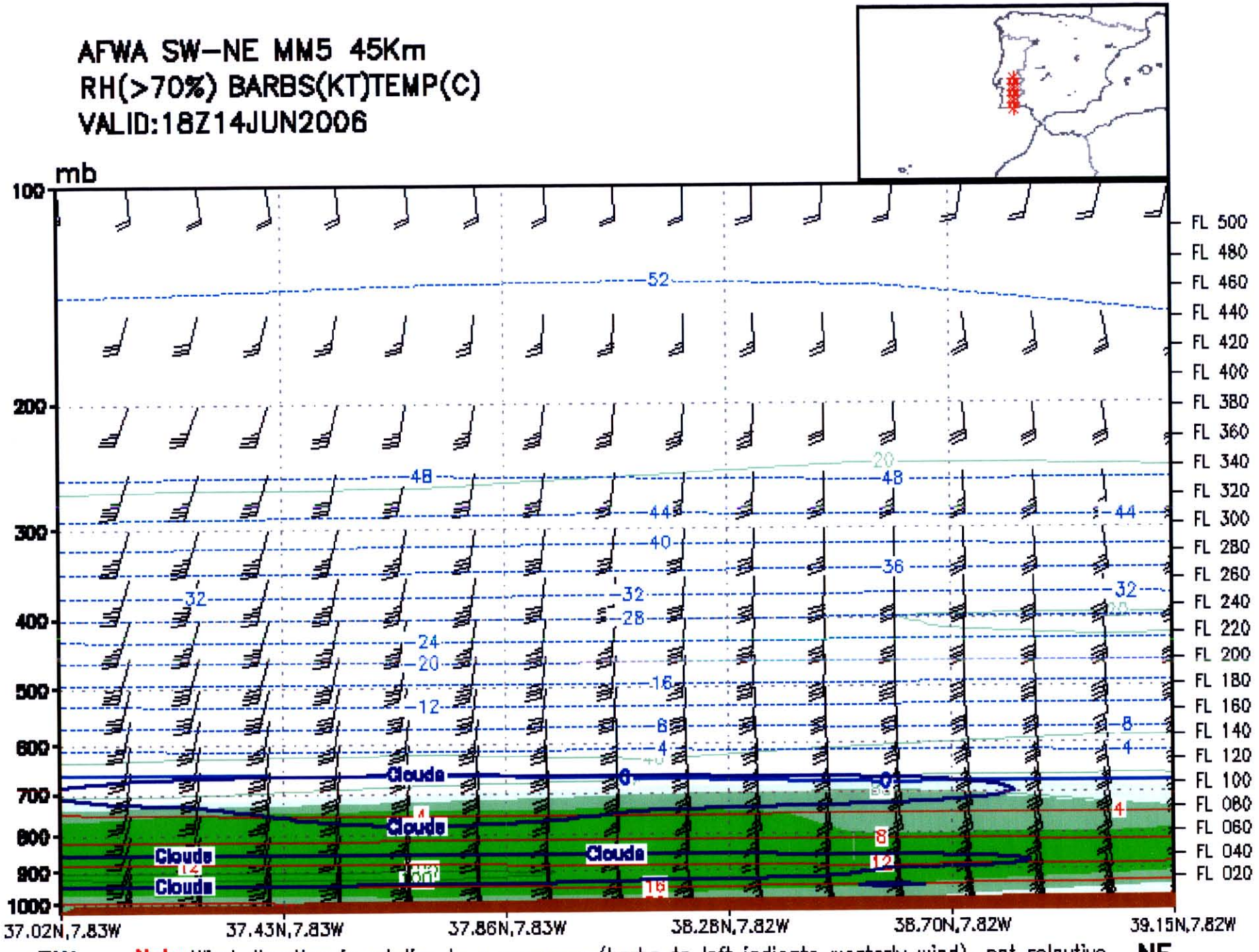
Flight #	B211	Date	14/06/06	Operator(s)	Ian Rule	log page	1 of 1

Note to operator: Indicate whether entry refers to SWS or SHIMS

Time	Run id	Alt/FL	Mirr Pos	Int Times		Remarks	SWS	USH	LSH
				Vis	NIR				
0818						Laptop time set			
						Sws video u/s			
0830						Sws window cleaned, but it is raining… SHIMS not cleaned due to rain			
093822						T/o Beja			
0942			Zen +6	50	200	Sws ok	X		
0942			shims	50	200	Shims ok		x	
100054	R1.1	FL150	Nad - 6	30	200	Start run, clear above, view of clouds	x		
100554			shims	50	200	End run		x	
100735	R1.2	FL150	Nad - 6	30	200	Start run, view of clouds	x		
101605	R1.2	FL150	Zen + 6	100	200	Short zenith view, clear above	x		
101818	R1.2	FL150	Nad - 6	30	200	Back to nadir			
103004						End run			
103052	P1	Fl150	Nad - 6	30	200	Start profile			
104359		3500' qnh				End profile			
104847	R2.1	3500' qnh	Zen + 6	50	250	Between cloud layers run	X		
105223						End run			
105438	R3.1	1400' qnh	Zen +6	50	250	Just below cloud run	x		
105728	R3.1	1400' qnh	Nad - 6	50	250	Short nad view, clear below	X		
105943	R3.1	1400' qnh	zen + 6	50	250	Back to Zen, clear below	x		
110553	R3.1	1400' qnh	Nad - 6	50	250	Short nad view, clear below	X		
110752	R3.1	1400' qnh	Zen + 6	50	250	Back to zen	X		
111305	R3.1	1400' qnh	Nad - 6	50	250	Short nad view, clear below	X		
111511	R3.1	1400' qnh	Zen + 6	50	250	Back to zen	x		
1116			shims	50	200	Shims ok, cloud above		x	
112131	R3.1	1400' qnh	Nad - 6	50	250	View of ground			
112310	R3.1	1400' qnh	Zen + 6	50	250	Back to zen			
112444						End run			
112659	P2	1400' qnh	Zen + 6	30	200	Start profile, switch to nad at interrupt			
113752		FL080				End profile			
113752	R4.1	FL080	Nad - 6	30	200	Above cloud run			
115053	R4.1	FL090	Zen + 6	100	350	Short Zen view, clear above			
115224	R4.1	FL090	Nad - 6	30	200	Back to nad			
115841	R4.1	FL090	Zen +6	100	250	Short Zen view			
120017						End run, instruments off			
121403						Land Beja			



Note: Wind direction is relative to a compass (barbs to left indicate westerly wind), not relavtive to route of flight. Start point is always on left side of cross section, endpoint on right hand side. Model terrain drawn per route of flight.



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